REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

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1. REPORT DATE *(DD-MM-YYYY)*	2. REPORT TYPE	3. DATES COVERED *(From - To)*
19-04-2011	N/A	-

4. TITLE AND SUBTITLE

Environmental Assessment (EA):
Proposed Software Facilities,
Hill Air Force Base, Utah

5a. CONTRACT NUMBER

FA8201-09-D-0006

5b. GRANT NUMBER

5c. PROGRAM ELEMENT NUMBER

6. AUTHOR(S)

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5d. PROJECT NUMBER

5e. TASK NUMBER

5f. WORK UNIT NUMBER

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)

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9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)

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7274 Wardleigh Road
Hill AFB UT 84056

10. SPONSOR/MONITOR'S ACRONYM(S)

75 CEG/CEVP

11. SPONSOR/MONITOR'S REPORT NUMBER(S)

12. DISTRIBUTION/AVAILABILITY STATEMENT

Approved for public release, distribution unlimited.

13. SUPPLEMENTARY NOTES

The original document contains color images.

14. ABSTRACT

Hill Air Force Base (AFB) proposes to provide adequate facilities for software development, maintenance, and integration on Hill Air Force Base (AFB) and to demolish one unused structure on the base. The findings of this EA indicate that the proposed action would not have significant adverse effects on the human environment or any of the environmental resources as described in the EA. Therefore, it is concluded that a Finding of No Significant Impact is justified.

15. SUBJECT TERMS

Environmental Assessment
Hill Air Force Base

16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
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Hill Air Force Base, Utah

Final

Environmental Assessment:

Proposed Software Facilities, Hill Air Force Base, Utah

April 19, 2011

Final

Environmental Assessment (EA): Proposed Software Facilities, Hill Air Force Base, Utah

Contract No. FA8201-09-D-0006
Delivery Order No. 0021

Department of the Air Force
Air Force Materiel Command
Hill Air Force Base, Utah 84056

April 19, 2011

Prepared in accordance with the Department of the Air Force Environmental Impact Analysis Process (EIAP) 32 CFR Part 989, Effective July 6, 1999, which implements the National Environmental Policy Act (NEPA), the President's Council on Environmental Quality (CEQ) regulations.

EXECUTIVE SUMMARY

Purpose and Need

The purpose of the proposed action is to provide adequate facilities for software development, maintenance, and integration on Hill Air Force Base (AFB) and to demolish one unused structure on the base.

The proposed facilities would house up to 2,000 new base employees to accommodate increasing software engineering, development, and testing workloads for F-22 and F-35 aircraft. The proposed demolition would support Hill AFB efforts to comply with an Air Force Materiel Command requirement not to increase the footprint of base structures.

Selection Criteria

The new software facilities on Hill AFB should:

- be located in the software engineering development area in accordance with the Hill AFB general plan;
- provide an additional 254,000 square feet (ft^2) of military compliant structures, plus driveways and parking; and
- be adjacent to existing utilities.

Scope of Review

The issues that were identified for detailed consideration are: air quality, solid and hazardous wastes (including liquid waste streams), biological resources, and water quality.

Alternatives Considered in Detail

Alternative A (Proposed Action - Construct New Software Facilities) - The proposed action would include:

- footings, foundations, and floor slabs supporting structural steel shells;
- all utilities including mechanical and electrical systems;
- surrounding driveways, parking, concrete sidewalks, landscaping, and stormwater retention facilities;
- connections to adjacent buried utilities consisting of water, electricity, natural gas, telephone/data, sanitary sewer, and storm drains; and
- demolition of Building 1723.

Alternative B (No Action Alternative) - Under the no action alternative, new software facilities would not be constructed, and adequate facilities would not be provided. The existing facilities would operate as they currently exist.

Results of the Environmental Assessment

Two alternatives were considered in detail. The results of the environmental assessment are summarized in the following table.

Summary Comparison of Predicted Environmental Effects

Issue	Alternative A Proposed Action	Alternative B No Action
Air Quality	Qualified asbestos abatement contractors would prevent impacts to air quality. Construction equipment would create temporary emissions. Fugitive dust would be controlled. Air emissions from operations would be nearly identical to existing conditions for Building 1515. Conformity with the Clean Air Act was demonstrated.	Existing air emissions (nearly all from space heating) are 1.7 tons per year or less for each criteria pollutant as well as for hazardous air pollutants (HAPs).
Solid and Hazardous Waste	If contaminated building materials, soils or pavements are identified, they would be properly handled during the demolition and construction process. Operational activities would generate the same types of waste as the existing facility.	Non-regulated wastes are collected and disposed. Various regulated wastes are collected, stored, analyzed if necessary, and either recycled or disposed in accordance with federal and state regulations.
Biological Resources	The proposed action would reduce available forage for birds and displace rodents. If any protected nesting birds should exist adjacent to construction activities, a certificate of registration would have to be obtained. Any restoration planting would include a specified seed mix.	Site habitat has been previously degraded by human activities. There are a limited number of wildlife species including sparse populations of small mammals and few birds. Many of the grasses and forbs are invasive.
Water Quality	During construction and operations, water quality would be protected by implementing stormwater management practices. Precipitation from the 95th percentile, 24 hour storm event would be retained on site. Detention and/or retention structures would either improve the current situation, or at a minimum, maintain current conditions. Good housekeeping measures and other best management practices would be incorporated into facility design and operations.	Good housekeeping measures and other best management practices are being followed. The capacity of existing storm drains downstream from Building 1515 is exceeded during hard rains. Storm drains convey surface runoff off base without detention.

Identification of the Preferred Alternative

Hill AFB prefers Alternative A (the proposed action).

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AFB	Air Force Base
AFOSH	Air Force Occupational Safety and Health
AICUZ	Air Installation Compatible Use Zone
ALC	Air Logistics Center
BASH	Bird Aircraft Strike Hazard
bgs	Below Ground Surface
CAA	Clean Air Act
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CFR	Code of Federal Regulations
CO	Carbon Monoxide
CWA	Clean Water Act
DAQ	Division of Air Quality (Utah)
DRMO	Defense Reutilization and Marketing Office
DWSP	Drinking Water Source Protection
EA	Environmental Assessment
EIAP	Environmental Impact Analysis Process
EIS	Environmental Impact Statement
EISA	Energy Independence and Security Act
EPA	Environmental Protection Agency (United States)
FQI	Floristic Quality Index
ft^2	Square Feet
HAP	Hazardous Air Pollutant
hr	Hour
lb	Pound
MBTA	Migratory Bird Treaty Act
MILCON	Military Construction
MS4	Municipal Separate Storm Sewer System
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NO_x	Oxides of Nitrogen

O_3	Ozone
OSHA	Occupational Safety and Health Administration
PCB	Polychlorinated Biphenyl
PM-10	Particulates Smaller Than 10 Microns in Diameter
PM-2.5	Particulates Smaller Than 2.5 Microns in Diameter
ppm	Parts Per Million
RCRA	Resource Conservation and Recovery Act
RHI	Range Health Index
SHPO	State Historic Preservation Office
SIP	State Implementation Plan
SO_2	Sulfur Dioxide
SOC	Species of Concern
SO_x	Oxides of Sulfur
SWPPP	Stormwater Pollution Prevention Plan
UAC	Utah Administrative Code
UGS	Utah Geological Survey
USAF	United States Air Force
USC	United States Code
VOC	Volatile Organic Compound
WCI	Wildlife Community Index
WFRC	Wasatch Front Regional Council

1 PURPOSE OF AND NEED FOR ACTION

1.1 Introduction

Hill Air Force Base (AFB) is located approximately 25 miles north of downtown Salt Lake City and seven miles south of downtown Ogden, Utah (Figure 1). Hill AFB is surrounded by several communities: Roy and Riverdale to the north; South Weber to the northeast; Layton to the south; and Clearfield, Sunset, and Clinton to the west. The base lies primarily in northern Davis County with a small portion located in southern Weber County.

Figure 1: Location of the Proposed Action on Hill AFB

Hill AFB is an Air Logistics Center (ALC) that maintains aircraft, missiles, and munitions for the United States Air Force (USAF). In support of that mission, Hill AFB provides worldwide engineering and logistics management for the F-22 Raptor, F-35 Joint Strike Fighter, F-16 Fighting Falcon, and A-10 Thunderbolt aircraft. Hill AFB also accomplishes depot repair, modification, and maintenance of the F-16, A-10 Thunderbolt, and C-130 Hercules aircraft. Additional activities include maintaining aircraft landing gear, wheels and brakes for military aircraft, rocket motors, air munitions, guided bombs, photonics equipment, training devices, avionics, instruments, hydraulics, software, and other aerospace-related components.

To support Hill AFB missions, the software maintenance group develops and maintains computer software, then ensures proper integration of the software into avionics and other hardware items.

1.2 Purpose of the Action

The purpose of the proposed action is the following:

- Provide adequate facilities for software development, maintenance, and integration on Hill AFB.

- Demolish one unused structure on Hill AFB (Building 1723).

1.3 Need for the Action

The existing software development, maintenance, and integration facilities on Hill AFB will not accommodate projected workloads. Hill AFB is the designated technical repair center for all USAF fighter aircraft avionics and weapons software. Up to 2,000 new software jobs could be created on Hill AFB during the next few years due to increasing software engineering, development, and testing workloads for F-22 and F-35 aircraft. Military construction (MILCON) project data explain existing facilities are almost completely filled with other workloads. Without new facilities, the software maintenance group would not be able to accomplish its assigned activities.

The proposed demolition would support Hill AFB efforts to comply with an Air Force Materiel Command requirement not to increase the footprint of base structures. Building 1723 is a former warehouse in the vicinity of Tooele Rail Shop on Hill AFB. It is no longer useful for its intended purpose. Due to its size and location, no other beneficial use has been identified for it.

1.4 Alternative Selection Criteria

Due to the considerations presented in the preceding sections and Air Force planning process considerations, the following selection criteria were established. Software facilities on Hill AFB should:

- Be located in the software engineering development area in accordance with the Hill AFB general plan.

The Hill AFB general plan dictates development zones applicable to maintaining facilities and building new structures on the base. The software engineering development area contains structures that house employees working on both secure and non-secure software related workloads. Segregating these land uses into a contiguous zone promotes workload efficiency, and prevents conflicts with industrial uses, explosive clear zones, and residences. Development zones promote the safety of military personnel and their children, civilian employees, contractors, and base visitors.

- Provide an additional 254,000 square feet (ft^2) of military compliant structures, plus driveways and parking.

  The required square footage was calculated by Air Force MILCON planners based on projected workloads. The total is comprised of 144,000 ft^2 for secure software activities, 38,000 ft^2 for non-secure software activities, and 72,000 ft^2 for avionics integration activities.

- Be adjacent to existing utilities.

  The MILCON funding approval for this project was based on utilities being present at the site boundary.

1.5 Relevant Plans, EISs, EAs, Laws, Regulations, and Other Documents

One relevant environmental assessment (EA) was identified. Prepared in 2008, it analyzed the effects of enhanced use leasing to develop the west side of Hill AFB (CH2M 2008).

During the scoping process, no other relevant plans, environmental impact statements (EISs), or EAs were identified.

The following federal, state, and local laws and regulations would apply to the proposed action:

- The National Environmental Policy Act (NEPA), Title 42 of the United States Code (USC) Section 4321 *et seq*.

- Council on Environmental Quality regulations, Title 40 of the Code of Federal Regulations (CFR) Parts 1500-1508.

- USAF-specific requirements contained in 32 CFR Part 989, Environmental Impact Analysis Process (EIAP).

- Safety guidelines of the Occupational Safety and Health Administration (OSHA).

- Relevant Air Force Occupational Safety and Health (AFOSH) standards.

- Utah's fugitive emissions and fugitive dust rules (Utah Administrative Code [UAC] Section R307-309).

- Utah's State Implementation Plan (UAC Section R307-110), which complies with the General Conformity Rule of the Clean Air Act (CAA), Section 176 (c).

- Determining Conformity of Federal Actions to State or Federal Implementation Plans, 40 CFR Part 93.154.

- USAF *Conformity Guide*, 1995.

- Utah Asbestos Rules, UAC, Section R307-801.

- The Resource Conservation and Recovery Act (RCRA), 42 USC Chapter 82, and regulations promulgated thereunder, 40 CFR Part 260 *et seq*.

- Federal facility agreement dated April 10, 1991, under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA), 42 USC Section 9601 *et seq*.

- Utah hazardous waste management regulations contained in UAC Section R315, and the Hill AFB *Hazardous Waste Management Plan* dated May, 2001, and subsequent versions.

- The Clean Water Act (CWA), 33 USC Section 1251 *et seq*., and Utah statutes and regulations promulgated thereunder.

- The Energy Independence and Security Act (EISA) of 2007, Public Law No. 110-140, Sec. 438, Storm Water Runoff Requirements for Federal Development Projects.

- The Hill AFB *Stormwater Management Plan - Municipal Stormwater Permit*, dated April, 2007, and subsequent versions.

- The Hill AFB *Updated Drinking Water Source Protection (DWSP) Plan, Hill Air Force Base Well 5*, dated May, 2008, and subsequent versions.

- Migratory Bird Treaty Act (MBTA), 16 USC Sections 703-712 *et seq*.

- Bald and Golden Eagle Protection Act, 16 USC Sections 668-668c *et seq*.

- The Hill AFB *Integrated Natural Resources Management Plan*, dated August, 2007, and subsequent versions.

- The Hill AFB *Integrated Cultural Resources Management Plan*, dated January, 2007, and subsequent versions.

- The National Historic Preservation Act (NHPA) of 1966, as amended 16 USC Section 470 *et seq*.

During the scoping process, no other documents were identified as being relevant to the proposed action.

1.6 Decisions That Must Be Made

Hill AFB must decide whether to:

- Construct new software facilities, or
- Not construct new software facilities (no action).

If new software facilities are constructed, then a location must be selected.

1.7 Scope of this Environmental Analysis

The scope of the current environmental analysis is to explore environmental issues related to the proposed action and the reasonable alternatives identified within this document.

1.7.1 History of the Planning and Scoping Process

Scoping discussions were held: to identify potential environmental concerns; to facilitate an efficient environmental analysis process; to identify issues and alternatives that would be considered in detail while devoting less attention and time to issues that were not relevant; and to save time in the overall process by helping to ensure that draft documents would adequately address relevant issues, thereby reducing the time required to proceed to a final document.

On November 8, 2010, an initial scoping meeting was conducted at the offices of EM-Assist, Layton, Utah. Attendees included authors of this document, the Hill AFB EIAP manager, and representatives from EM-Assist.

During this meeting and other scoping interactions with the Hill AFB EIAP Interdisciplinary Team, the following environmental issues were addressed:

- air quality;
- solid and hazardous wastes (including liquid waste streams);
- biological resources;
- geology and surface soils;
- water quality;
- cultural resources;
- occupational safety and health;
- air installation compatible use zone (AICUZ); and
- socioeconomic resources.

1.7.2 Issues Studied in Detail

The issues that have been identified for detailed consideration and are therefore presented in Sections 3 and 4 are:

Air Quality (attainment status, emissions, Utah's state implementation plan [SIP])

Building 1723, which may contain asbestos, would be demolished as part of the proposed action. For the purposes of this document, if the word construction is used by itself, any potential demolition activities are included.

Air emissions would be produced by construction equipment. Operating the proposed action would create air emissions. Air quality effects are discussed in Section 4 of this document.

Solid and Hazardous Wastes (materials to be used, stored, recycled, or disposed, including liquid waste streams; existing asbestos, lead-based paint, mercury, and polychlorinated biphenyls [PCBs])

During construction activities, solid wastes would be generated, and other hazardous wastes might be generated that would require proper treatment and/or disposal. Additional hazardous wastes could be generated if a spill of fuel, lubricants, or construction-related chemicals were to occur.

Operating the proposed action would be expected to create solid and hazardous wastes. Effects related to solid and hazardous wastes are discussed in Section 4 of this document.

Biological Resources (flora and fauna including threatened, endangered, sensitive species; wetlands; floodplains)

Approximately 22 acres of previously disturbed land would be re-developed by the proposed action. Effects related to biological resources are discussed in Section 4 of this document.

The scoping discussions did not identify any issues related to wetlands or floodplains.

Water Quality (surface water, groundwater, water quantity, wellhead protection zones)

Based on information provided by Hill AFB, the land area to be disturbed would be approximately 22 acres in size. The proposed action would be subject to stormwater permit and compliance requirements both during the construction period and during operations.

Depth to groundwater is approximately 30 feet below the ground surface (bgs) in the vicinity of proposed action. The proposed action would not require excavations deeper than approximately ten feet bgs (for footings, foundations, and on-site utilities).

The scoping discussions did not identify any issues related to quantity of water. The proposed action would be located within a DWSP zone.

Effects related to water quality are discussed in Section 4 of this document.

Liquid waste streams created during construction and from operating the proposed action are included in the discussions related to solid and hazardous wastes (Section 4 of this document).

1.7.3 Issues Eliminated From Further Study

The issues that were not carried forward for detailed consideration in Sections 3 and 4 are:

Geology and Surface Soils (seismicity, topography, minerals, geothermal resources, land disturbance, known pre-existing contamination)

The scoping discussions did not identify any issues related to seismicity, topography, minerals, or geothermal resources.

Excavations would be necessary to install: footings; foundations; and buried utilities consisting of water, electricity, natural gas, telephone/data, sanitary sewer, and storm drains. Discussions related to preventing soil erosion (stormwater pollution prevention) are addressed under water quality effects (Section 4 of this document).

Contamination of shallow soil is not known to exist in the vicinity of the proposed action, but the potential to encounter contaminated soil does exist. Potential discovery of suspicious soils during excavation is addressed under solid and hazardous wastes (Section 4 of this document).

Cultural Resources (archaeological, architectural, traditional cultural properties)

Regarding the proposed demolition activities, Building 1723 is not historic. Given the lack of previous findings and the extensive development and disturbance of Hill AFB, the potential for historic properties is extremely low. However, if any such properties are found during construction, ground-disturbing activities in the immediate vicinity would cease, the Hill AFB cultural resources program manager would be notified, and unanticipated discovery of archaeological deposits procedures would be implemented with direction from the Hill AFB cultural resources program manager in accordance with Standard Operating Procedure 5 in the Hill AFB *Integrated Cultural Resources Management Plan* (Hill 2007a).

The Utah state historic preservation office (SHPO) concurred with a finding of no adverse effect after reviewing the proposed action (Appendix A).

Hill AFB has determined formal consultation with American Indian Tribes is not warranted given the absence of resources that may be reasonably construed as being of interest to them.

Occupational Safety and Health (physical and chemical hazards, radiation, explosives, bird and wildlife hazards to aircraft)

Throughout the construction phase of the project, Hill AFB contractors would follow OSHA safety guidelines as presented in the CFR. Hazardous materials that could be used during construction are included in the discussions related to solid and hazardous wastes (Section 4 of this document).

Related to Hill AFB military personnel and civilian employees, the Bio-environmental Engineering Flight (75 AMDS/SGPB) is responsible for implementing AFOSH standards. The AFOSH program addresses (partial list): hazard abatement, hazard communication, training, personal protective equipment and other controls to ensure that occupational exposures to hazardous agents do not adversely affect health and safety, and acquisition of new systems.

The scoping discussions did not identify any issues related to occupational safety and health that would not be routinely addressed by OSHA rules and/or the Bio-engineering Flight.

AICUZ (noise, accident potential, airfield encroachment)

The scoping discussions did not identify any issues related to noise, aircraft accident potential, or airfield encroachment.

Socioeconomic Resources (local fiscal effects including employment, population projections, and schools)

Opportunities would exist for local construction workers if the proposed action is constructed. Operating the proposed action would be expected to create up to 2,000 new jobs at Hill AFB. The scoping discussions did not identify any issues related to population projections or schools.

1.8 Applicable Permits, Licenses, and Other Coordination Requirements

Obtaining, modifying, and/or complying with the following permits would be required to implement the proposed action.

- The Hill AFB Title V Operating Permit (Permit Number: 1100007001, and subsequent versions). See Section 4.2.1 for additional details.

- Utah's Storm Water General Permit for Construction Activities permit number UTR300000, dated July 1, 2008, and subsequent versions. See Section 4.2.3 for additional details.

- Utah's General Permit for Discharges from Small Municipal Separate Storm Sewer Systems (MS4s) permit number UTR090000, dated August 1, 2010, and subsequent versions. See Section 4.2.3 for additional details.

- Utah's Multi Sector General Permit for Industrial Facilities permit number UTR000444, dated January, 2008, and subsequent versions. See Section 4.2.3 for additional details.

- The Hill AFB *Stormwater Management Plan - Municipal Stormwater Permit*, dated April, 2007, and subsequent versions. See Section 4.2.3 for additional details.

The proponents would coordinate with the Hill AFB hazardous materials program manager (75 CEG/CEVC) to discuss hazardous materials brought on base to construct the proposed action. See Section 4.2.2 for additional details.

2.0 ALTERNATIVES, INCLUDING THE PROPOSED ACTION

2.1 Introduction

This section discusses the process used to develop the alternatives. It lists the alternatives and compares them. This section also states the Air Force's preferred alternative.

2.2 Process Used to Develop the Alternatives

As discussed in Sections 1.3 and 1.4 of this document, Hill AFB proposes to provide new software facilities. The proposed facilities would address the needs discussed in Section 1.3 and the criteria stated in Section 1.4 of this document.

Hill AFB planners and engineers investigated the feasibility of using existing on-base facilities (see Section 2.4.1). Other locations for the facilities (see Section 2.4.2) were considered by the Hill AFB Facility Working Group. The option to take no action was also considered.

2.3 Description of Alternatives Considered in Detail

2.3.1 Alternative A: Proposed Action - Construct New Software Facilities

The proposed action is to construct new software facilities in the western portion of Hill AFB (see Figures 1 and 2). MILCON project data indicate the proposed action would consist of:

- Footings, foundations, and floor slabs supporting structural steel shells (254,000 ft^2 of building space). The total is comprised of 144,000 ft^2 for secure software activities (two additions to Building 1515), 38,000 ft^2 for non-secure software activities (a separate structure), and 72,000 ft^2 for avionics integration activities (a separate structure).

- All utilities including mechanical and electrical systems.

- Surrounding driveways, parking, concrete sidewalks, landscaping, and stormwater retention facilities.

- Connections to adjacent buried utilities consisting of water, electricity, natural gas, telephone/data, sanitary sewer, and storm drains.

- Demolition of Building 1723.

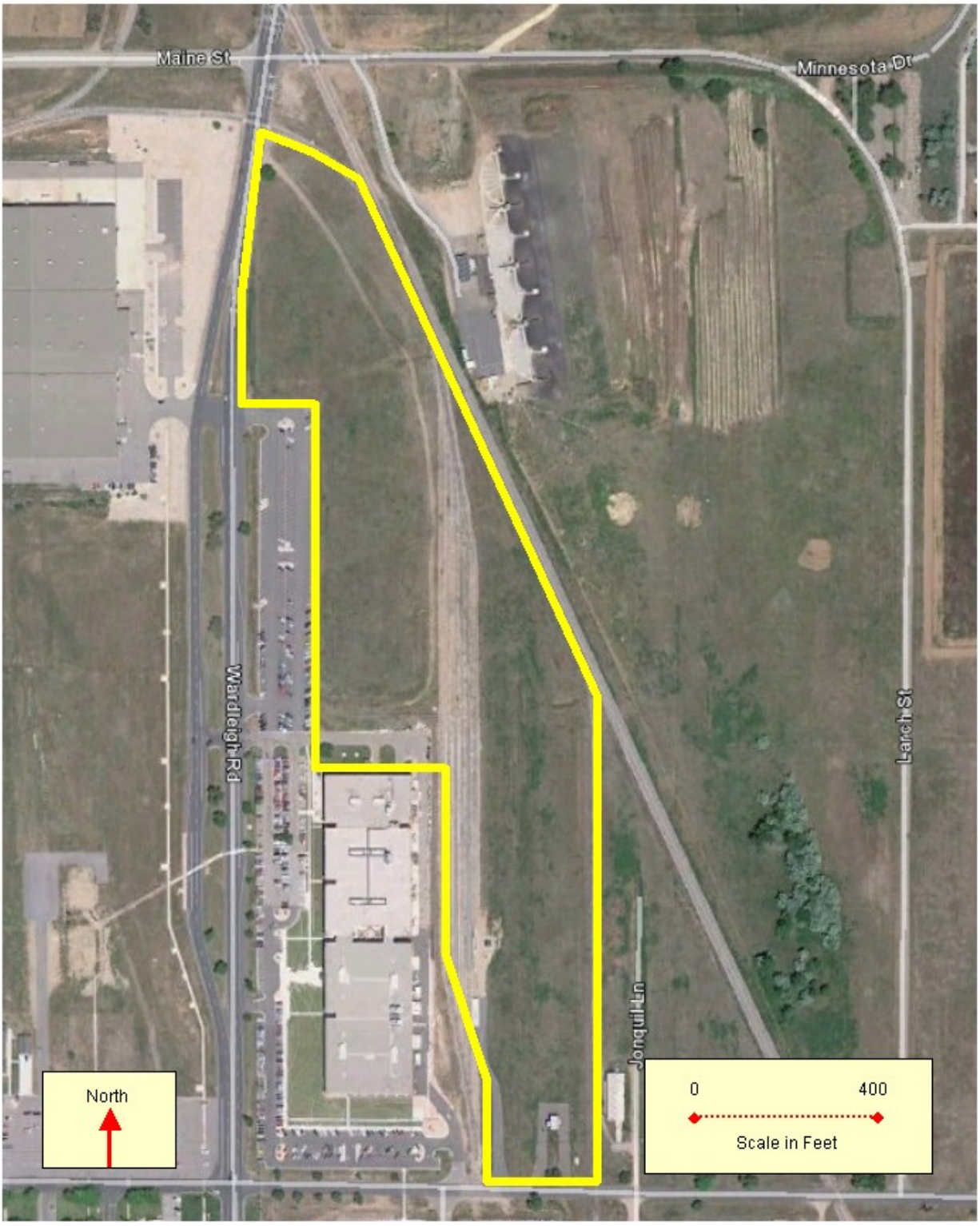

Figure 2: Boundary of the Proposed Action

2.3.2 Alternative B: No Action

Under the no action alternative, new software facilities would not be constructed, and adequate facilities would not be provided. The existing facilities would operate as they currently exist. The needs discussed in Section 1.3 would not be met.

2.4 Alternatives Eliminated From Detailed Study

2.4.1 Alternative C: Use Other Existing Facilities

MILCON project data state there are no facilities on Hill AFB with adequate security to house the specialized laboratory space or with adequate air conditioning for the computers used in advanced avionics and weapons software development and testing. MILCON project data also state there is no excess facility space on base that could be converted to provide the required secure software development environment.

2.4.2 Alternative D: Other Locations on Base

When Hill AFB planners and engineers considered other locations for the new software facilities, no other site was identified that could meet the selection criteria presented in Section 1.4.

2.5 Summary Comparison of the Alternatives and Predicted Achievement of the Project Objectives

2.5.1 Summary Comparison of Project Alternatives

The no action alternative (Alternative B) would be to continue current operations using the existing facilities. The needs discussed in Section 1.3 would not be met.

Considering the implementation of Alternative A, C, or D, only Alternative A (the proposed action) would fully satisfy the needs discussed in Section 1.3 and the criteria stated in Section 1.4 of this document.

2.5.2 Predicted Achievement of Project Objectives

Alternative	**A** Proposed Action	**B** No Action	**C** Use Other Existing Facilities	**D** Other Locations on Base
Description of the Project Objective				
Be located in the software engineering development area in accordance with the Hill AFB general plan	Yes	Yes	No	No
Provide an additional 254,000 ft^2 of military compliant structures, plus driveways and parking	Yes	No	No	No
Be adjacent to existing utilities	Yes	Yes	Yes	Yes

Table 1: Predicted Achievement of Project Objectives

2.6 Identification of the Preferred Alternative

Hill AFB prefers Alternative A (the proposed action).

3.0 AFFECTED ENVIRONMENT

3.1 Introduction

Section 3 of this document discusses the existing conditions of the potentially affected environment, establishing a resource baseline against which the effects of the various alternatives can be evaluated. It presents relevant facilities and operations, environmental issues, pre-existing environmental factors, and existing cumulative effects due to human activities in the vicinity of the proposed action or the alternative locations.

Issues discussed during scoping meetings, but eliminated from detailed consideration (see Section 1.7.3) include:

- geology and surface soils (seismicity, topography, minerals, geothermal resources, land disturbance, known pre-existing contamination);
- cultural resources (archaeological, architectural, traditional cultural properties);
- occupational safety and health (physical and chemical hazards, radiation, explosives, bird and wildlife hazards to aircraft);
- AICUZ (noise, accident potential, airfield encroachment); and
- socioeconomic resources (local fiscal effects including employment, population projections, and schools).

3.2 Description of Relevant Facilities and Operations

As stated above, the existing facilities (Building 1515) do not comply with the criterion to provide 254,000 ft^2 of military compliant structures. No other relevant facilities or operations were identified.

3.3 Description of Relevant Affected Issues

3.3.1 Air Quality

Hill AFB is located in Davis and Weber Counties, Utah. The Utah Division of Air Quality (DAQ) reports neither county is in complete attainment status with federal clean air standards (DAQ 2010a, see Figures 4 and 5). Non-attainment areas fail to meet national ambient air quality standards (NAAQS) for one or more of the criteria pollutants: oxides of nitrogen (NOx), sulfur dioxide (SO_2), ozone (O_3), particulates less than 10 microns in diameter (PM-10), particulates less than 2.5 microns in diameter (PM-2.5), carbon monoxide (CO), and lead. Davis County (in which the proposed action lies) is designated as a non-attainment area for PM-2.5 and is a maintenance area for ozone. Davis County is awaiting a non-attainment designation for ozone (DAQ 2007, see Figure 6). Hill AFB would be required to obtain offsets for emission increases due to any major modification in accordance with Appendix S to 40 CFR Part 51, Emission Offset Interpretative Ruling.

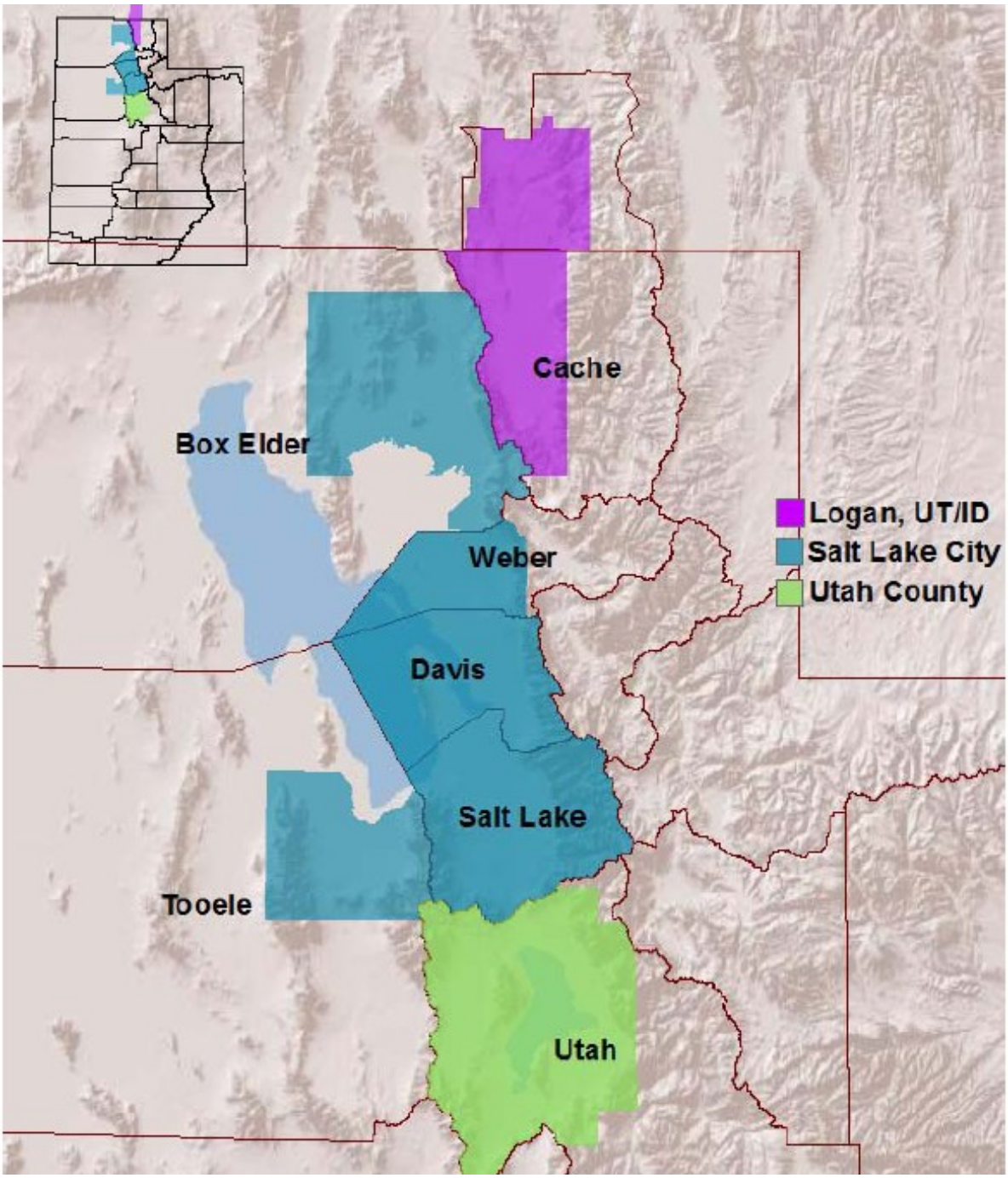

Figure 3: State of Utah Areas of Non-Attainment for PM-2.5

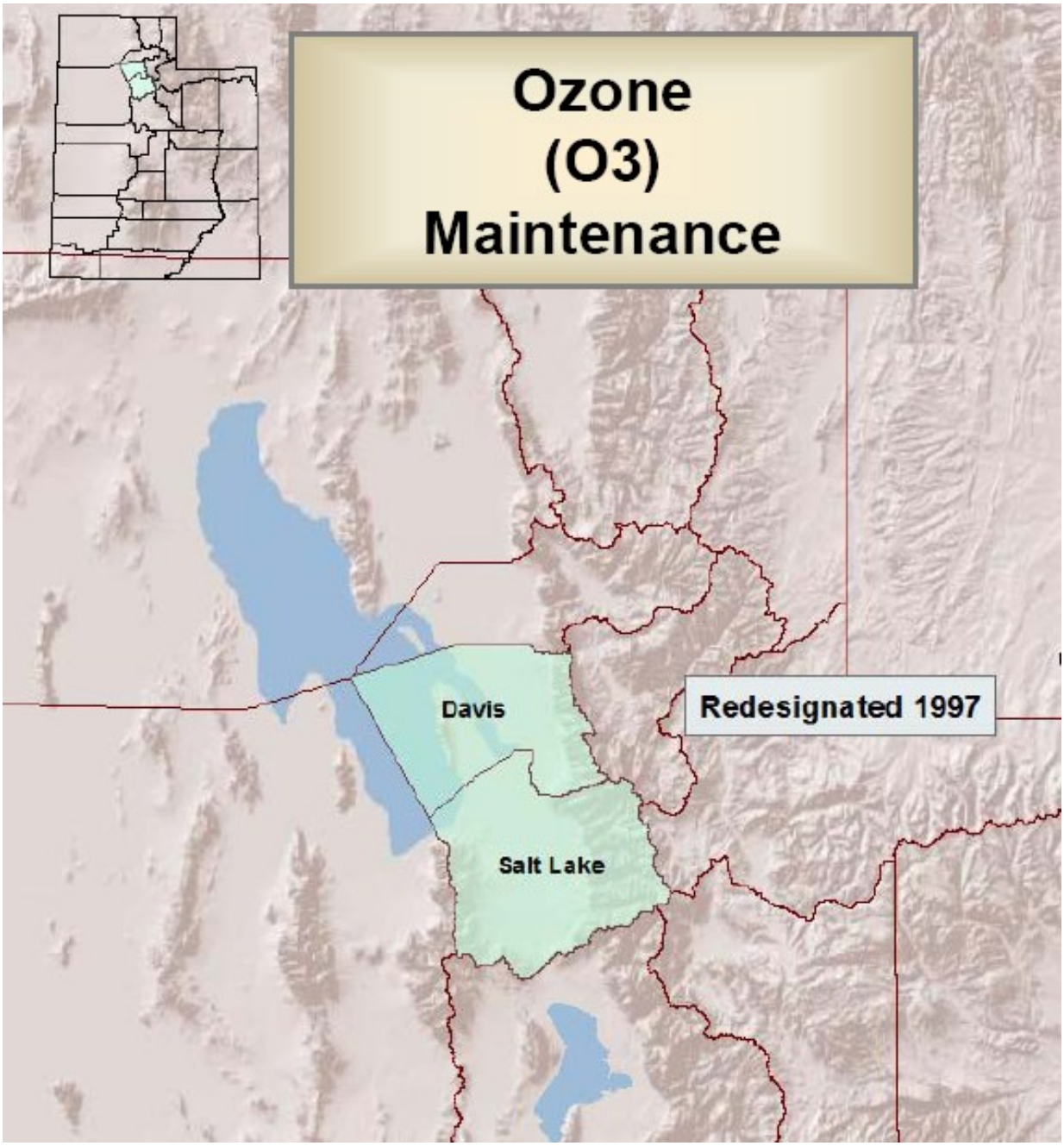

Figure 4: State of Utah Areas of Maintenance for Ozone

Figure 5: State of Utah Recommended Areas of Non-Attainment for Ozone

The current air quality trend at Hill AFB is one of controlling emissions as Hill AFB managers implement programs to eliminate ozone-depleting substances, limit use of volatile organic compounds (VOCs), switch to lower vapor pressure solvents and aircraft fuel, convert internal combustion engines from gasoline and diesel to natural gas, and improve the capture of particulates during painting and abrasive blasting operations (in compliance with the base's Title V air quality permit).

Emission estimates are available for criteria air pollutants and hazardous air pollutants (HAPs) for Hill AFB (Hill 2010) and for Davis and Weber Counties (DAQ 2010b, United States Environmental Protection Agency [EPA] 2010). The estimates, shown below in Table 2, were based on data from calendar year 2009 for Hill AFB, and for calendar year 2005 (still the most recent data available) for Davis and Weber Counties. The county HAP emissions were obtained from EPA, and calendar year 2002 was the most recent year available.

Location	VOC	CO	NOx	PM-10	PM-2.5	HAP	SOx
Hill AFB	267	283	255	57	28	86	5
Davis County	18,082	65,138	10,741	3,863	1,224	2,533	3,483
Weber County	15,592	48,943	6,880	3,011	940	1,951	240

Table 2: Baseline Criteria Pollutants and HAPs (tons/year)

Reported air emissions from the existing facilities (CH2M 2010) are created from cleaning circuit boards, coating circuit boards, and operating emergency generators. The aggregate calendar year 2009 air emissions from all of these sources are shown in Table 3. These values are so low they are stated in pounds per year rather than the typical tons per year.

Location	VOC	CO	NOx	PM-10	PM-2.5	HAP	SOx
Building 1515	17.30	0.64	2.50	0.08	0.05	0.60	0.44

Table 3: Existing Operational Air Emissions (pounds/year)

Additional air emissions from the existing facilities exist from space heating during the winter months. These two buildings are heated using natural gas fired boilers. The calendar year 2009 air emissions (CH2M 2010) are shown in Table 4.

Heated Area	VOC	CO	NOx	PM-10	PM-2.5	HAP	SOx
Hill AFB Central Steam Plant Heats 3,707,253 ft^2	1.2	18.0	21.5	1.6	1.6	0.4	0.1
Building 1515 (288,000 ft^2)	0.1	1.4	1.7	0.1	0.1	0.0	0.0

Notes:
The central steam plant provides heat for 3,707,253 ft^2 of Hill AFB facilities.
Building 1515 represents 288,000 ft^2 of heated area.
On-site boilers were assumed to have similar characteristics to those at the central steam plant.
Based on summer versus winter month fuel usage, heating related emissions were prorated as 86 percent of total emissions.

Table 4: Existing Air Emissions Due to Heating (tons/year)

3.3.2 Solid and Hazardous Wastes

In general, hazardous wastes include substances that, because of their concentration, physical, chemical, or other characteristics, may present substantial danger to public health or welfare or to the environment when released into the environment or otherwise improperly managed. Potentially hazardous and hazardous wastes generated at Hill AFB are managed as specified in the *Hill AFB Hazardous Waste Management Plan* with oversight by personnel from the Environmental Management Division and Defense Reutilization and Marketing Office (DRMO). Hazardous wastes at Hill AFB are properly stored during characterization, and then manifested and transported off site for treatment and/or disposal.

Non-regulated wastes created within the existing facilities are comprised of office and break room trash.

Based on reported data for 2009 and 2010 (EM 2010), wastes created within the existing facilities that are either regulated or have the potential to be regulated include the following waste streams.

- Absorbent pads, pillows, rags, and/or filters:
  21 pounds/year, non-hazardous; 80 pounds/year, hazardous.

- Electronic components:
  39 pounds/year, non-hazardous; 778 pounds/year, hazardous.

- Used batteries:
  94 pounds/year, either recycled or non-hazardous.

- Sealant remnants and/or residues:
  four pounds/year, hazardous.

3.3.3 Biological Resources

No federal or state endangered or threatened species are known to occur on Hill AFB (Hill 2007b) and no likely habitat for any such species would be disturbed by the proposed action. Wildlife species that are federally listed, candidates for federal listing, or for which a conservation agreement is in place automatically qualify for the Utah sensitive species list. The additional species on the Utah sensitive species list, wildlife species of concern (SOC), are species for which there is credible scientific evidence to substantiate a threat to continued population viability. Two species on Utah's SOC list have been sighted on Hill AFB, the Long Billed Curlew and the Bobolink. Those sighting were unusual for these species and occurred during the fall migration. These species have not been observed in the vicinity of the proposed action. There are no wetlands or floodplains in the vicinity of the alternatives discussed in this document. The alternatives discussed in this document are located in or near developed areas on Hill AFB.

The habitat within this 22 acre area is classified as semi-improved (Hill AFB habitat descriptions [Hill 2007b]). This habitat is characterized by open fields of grass and forbs that are periodically mowed. Periodic maintenance is performed primarily for reasons such as erosion and dust control, bird control, and visual clear zones. This land use classification can include areas adjacent to runways, taxiways, and aprons; runway clear zones; lateral safety zones; rifle and pistol ranges; weapons firing and bombing ranges; picnic areas; ammunition storage areas; antenna facilities; and golf course roughs.

Semi-improved areas are not irrigated, and the plant species that grow in these communities survive on natural precipitation. Typically, there is little to no over-story and only a small number of wild trees exist in these habitats. Mowing prevents new trees from establishing. The soil is sandy to sandy loam, with most moisture evaporating or percolating beneath the root zone. Plants growing in this habitat have adapted to sparse soil moisture and can withstand periods of drought as well as cold snowy conditions. The grassy areas provide food and cover for a limited number of wildlife species including sparse populations of small mammals. Many of the grasses and forbs are invasive (Table 5). Insects living in this habitat provide food for a small diversity of birds. There are no urban forest or wild trees in the 22 acres comprising the proposed action.

Common name	Scientific name
Storksbill	*Erodium cicutarium*
Cheat Grass	*Bromus tectorum*
Dandelion	*Taraxacum officinale*
Kochia	*Kochia scoparia*
Tumble Weed (Russian Thistle)	*Salsola iberica*
Common Ragweed	*Ambrosia artemisifolia*
Western Salsify (Goatsbeard)	*Tragonpogon dubius*

Table 5: Invasive Species Currently Present

The natural resources program at Hill AFB has created models to measure components that indicate the health of the habitat at specific locations. The components that are measured include: the health of a range (range health index [RHI]), the ability of a habitat to support wildlife (wildlife community index [WCI]), and the encroachment of invasive species (floristic quality index [FQI]). Site surveys quantify the health of a range by producing calculated indices ranging from 0.01 to 1.00 with 1.00 being the optimal level at which a habitat can function. For the RHI scale, 0.80 and higher is considered pristine, and below 0.30 is considered highly degraded. The RHI for the 22 acre site is 0.68, the WCI is 0.20, and the FQI is 0.59.

Several species of small mammals occupy the semi-improved habitats on Hill AFB. Various species of birds have been observed using the Hill AFB urban forest areas in the general vicinity of the proposed action (see Table 6).

Common Name	Scientific Name
American Kestral	*Falco sparverius*
American Robin	*Turdus migratorius*
Barn Swallow	*Hirundo rustica*
Black-billed Magpie	*Pica hudsonia*
Black-capped chickadee	*Poecile atricapilla*
Brewer's Blackbird	*Euphagus cyanocephalus*
Bullock's Oriole	*Icterus bullockii*
Common Raven	*Corvus corax*
Dark-eyed Junco	*Junco hyemalis*
European Starling	*Sturnus vulgaris*
House Finch	*Carpodacus mexicanus*
House Sparrow	*Passer domesticus*
Meadowlark	*Sturnella neglecta*
Morning Dove	*Zenaida macroura*
Northern Flicker	*Colaptes auratus*
Rock Pigeon	*Columba livia*
White-crowned Sparrow	*Zonotrichia leucophrys*
various hummingbirds	

Table 6: Birds That Could Occupy Trees of Hill AFB Urban Forest

3.3.4 Water Quality

In areas of Hill AFB that are not heavily developed, runoff is allowed to infiltrate into the ground through overland flow or surface ditches, discharging to large unoccupied areas. In developed areas, stormwater has been typically conveyed to 14 retention or detention ponds within Hill AFB boundaries. In some parts of Hill AFB, stormwater is conveyed without detention to off-base receiving waters.

No surface water bodies are present within the area occupied by the exiting facilities or the area proposed for constructing the new facility. Based on a review of the *Hill AFB Stormwater Management Plan - Municipal Stormwater Permit* (Stantec 2007), storm drains convey surface

runoff from this area of Hill AFB (Figure 2) west to the City of Sunset (Fife's Ditch) without detention. The capacity of existing storm drains downstream from Building 1515 is exceeded during hard rains. Hill AFB is working to retain and infiltrate more storm water on site as required in EISA Section 438.

As mentioned in Section 1.7.2, excavations would not approach the groundwater surface. The proposed action would be located within a DWSP zone (Stantec 2008a, Stantec 2008b).

3.4 Description of Relevant Pre-Existing Environmental Factors

The Wasatch Front Regional Council (WFRC 2003) assessed earthquake hazards for Davis County, Utah, including the portion of Hill AFB that includes the alternatives discussed in this document. The Davis County liquefaction potential map shows this area of Hill AFB to be in the zone labeled as very low risk. The Davis County earthquake hazard map shows this area of Hill AFB to be outside of known fault zones. The Davis County landslide hazard map shows this area of Hill AFB to be outside of known landslide risk zones.

During scoping discussions and subsequent analysis, no other pre-existing environmental factors (e.g., hurricanes, tornados, floods, droughts) were identified for the proposed action.

3.5 Description of Areas Related to Cumulative Effects

For air quality, the area related to cumulative effects would include Hill AFB, Davis County, and Weber County.

For solid and hazardous wastes, the area related to cumulative effects would include Hill AFB.

For water quality, the area related to cumulative effects would include the Hill AFB stormwater collection system and Fife's Ditch.

4.0 ENVIRONMENTAL CONSEQUENCES

4.1 Introduction

This section discusses effects to the resources that were identified for detailed analysis in Section 1.7.2, and for which existing conditions were presented in Section 3.3. For each of these resources, the following analyses are presented:

- direct, indirect, and cumulative effects of the proposed action (Alternative A); and
- direct, indirect, and cumulative effects of no action (Alternative B).

4.2 Predicted Effects to Relevant Affected Resources

4.2.1 Predicted Effects to Air Quality

4.2.1.1 Alternative A (Proposed Action): Construct New Software Facilities

Direct Effects Due to Construction

Fugitive Dust: Fugitive emissions from construction activities would be controlled according to UAC Section R307-205, *Emission Standards: Fugitive Emissions and Fugitive Dust* and the Hill AFB *Fugitive Dust Plan*. Good housekeeping practices would be used to maintain construction opacity at less than 20 percent. Haul roads would be kept wet. Any soil that is deposited on nearby paved roads by construction vehicles would be removed from the roads and either returned to the site or placed in an appropriate on-base disposal facility.

Heavy Equipment: The internal combustion engines of heavy equipment would generate emissions of VOCs, CO, NOx, particulates, HAPs, and oxides of sulfur (SOx). Assumptions and estimated emissions for the construction of the Phase 1 addition to Building 1515 (72,000 ft^2) are listed in Table 7. Constructing the Phase 2 addition to Building 1515 and the avionics integration building (72,000 ft^2 each) would each generate similar emissions. Constructing the non-secure software building (38,000 ft^2) would generate approximately half of these emissions. Based on projected MILCON schedules, each of these four buildings would be constructed during different time periods. These emissions would not be concurrent.

Additional emissions from heavy equipment used during demolition activities (less than 3,000 ft^2) would be a small fraction of the emissions generated when constructing the new facilities.

Asbestos: Prior to demolition of any structures, a detailed asbestos survey would be performed by Hill AFB employees and the results incorporated into specifications for the demolition contracts. Each asbestos abatement contractor would be verified by the Hill AFB asbestos shop as qualified to perform regulated asbestos abatement projects, and both the company and individual workers would possess all required certifications to perform the assigned tasks. Prior to beginning any asbestos abatement efforts, a notification of at least 10 working days would be provided to DAQ if required. Because all work would be performed in accordance with

standards set by EPA and DAQ, there would be no impacts to air quality associated with asbestos abatement.

Data Assumptions

Equipment Type	Diesel Emission Factor (lbs/hr)					
	VOC (HC)	CO	NOx	PM10	HAPs	SOx
Asphalt Paver	0.28	1.24	2.96	0.24	0.05	0.25
Bobcat Loader	0.14	0.67	1.00	0.10	0.01	0.08
Cable Plow	0.59	3.75	4.49	0.59	0.08	0.38
Compressor (boring)	0.25	1.62	1.94	0.25	0.04	0.16
Concrete Truck	0.80	3.55	8.50	0.69	0.15	0.72
Crane	2.14	6.96	17.08	2.39	0.33	1.54
Dump Truck	0.63	2.04	6.98	0.58	0.16	0.65
Flat Bed Truck	0.48	1.54	5.29	0.44	0.12	0.49
Fork Lift	0.42	2.47	1.98	0.40	0.05	0.23
Generator	0.02	0.10	0.12	0.02	0.00	0.01
Loader/Backhoe	0.87	4.12	6.12	0.64	0.06	0.52
Motored Grader	0.83	2.01	5.08	0.53	0.06	0.46
Scraper	0.33	2.31	4.03	0.58	0.13	0.42
Track Hoe	0.91	6.65	13.75	1.84	0.26	1.19
Vibratory Compactor	0.38	1.44	4.31	0.36	0.09	0.46
Water Truck	1.10	3.58	12.28	1.02	0.28	1.14
Wheeled Dozer	0.46	1.48	5.08	0.35	0.08	0.49

Note: VOCs = Hydrocarbons and HAPs = Aldehydes
Source: Industry Horsepower Ratings and EPA 460/3-91-02

Construct Phase 1 Addition to Building 1515

EQUIPMENT TYPE	HOURS OF OPERATION	Diesel Emissions (lbs)					
		VOC	CO	NOx	PM10	HAPs	SOx
Asphalt Paver	460	128.8	570.4	1361.6	110.4	23.0	115.0
Bobcat Loader		0.0	0.0	0.0	0.0	0.0	0.0
Cable Plow		0.0	0.0	0.0	0.0	0.0	0.0
Compressor (boring)		0.0	0.0	0.0	0.0	0.0	0.0
Concrete Truck		0.0	0.0	0.0	0.0	0.0	0.0
Crane		0.0	0.0	0.0	0.0	0.0	0.0
Dump Truck	5840	3679.2	11913.6	40763.2	3387.2	934.4	3796.0
Flat Bed Truck		0.0	0.0	0.0	0.0	0.0	0.0
Fork Lift		0.0	0.0	0.0	0.0	0.0	0.0
Generator		0.0	0.0	0.0	0.0	0.0	0.0
Loader/Backhoe	1605	1396.4	6612.6	9822.6	1027.2	96.3	834.6
Motored Grader	400	332.0	804.0	2032.0	212.0	24.0	184.0
Scraper	800	264.0	1848.0	3224.0	464.0	104.0	336.0
Track Hoe	828	753.5	5506.2	11385.0	1523.5	215.3	985.3
Vibratory Compactor	828	314.6	1192.3	3568.7	298.1	74.5	380.9
Water Truck		0.0	0.0	0.0	0.0	0.0	0.0
Wheeled Dozer		0.0	0.0	0.0	0.0	0.0	0.0
TOTAL ESTIMATED EMISSIONS (lbs)		**6868.5**	**28447.1**	**72157.1**	**7022.4**	**1471.5**	**6631.8**
TOTAL ESTIMATED EMISSIONS (tons)		**3.43**	**14.22**	**36.08**	**3.51**	**0.74**	**3.32**

Hours of use based on estimates from Dave Gange, 309 AMXG/EN Lead Facility Engineer

Table 7: Calculated Heavy Equipment Emissions for New Construction

Direct Effects Due to Operations

The activities to be conducted in the new software facilities would be the same as are now being conducted in the existing facilities. Based on the area of new workspace (254,000 ft^2) compared to existing workspace in Building 1515 (288,000 ft^2), the very minor emissions stated in Table 3 would be expected to increase by 90 percent.

Based on discussions with the MILCON project programmer, space heating during the winter months would be provided by an on-site natural gas fired heating system. Calculated air emissions for space heating are shown in Table 8. These values are very similar to the values presented in Table 4 for the existing facilities.

Data Assumptions

Equipment Type	Natural Gas Emission Factor (pounds/MMSCF)					
	VOC	CO	NOx	PM10	HAPs	SOx
Natural Gas Furnace	5.5	40.0	94.0	7.6	0.01	0.6

Conversion Factors

	Calculate Annual Fuel Consumption					
Square Feet	254,000	254,000	254,000	254,000	254,000	254,000
BTU per hour per square foot	30	30	30	30	30	30
Heating hours per year	5,000	5,000	5,000	5,000	5,000	5,000
Million BTU per year	38,100	38,100	38,100	38,100	38,100	38,100
MMSCF per year	37.1	37.1	37.1	37.1	37.1	37.1

Operate New Software Facilities

Equipment Type	Natural Gas Emissions (pounds)					
	VOC	CO	NOx	PM10	HAPs	SOx
Natural Gas Furnace	204	1482	3484	282	0.4	22
TOTAL ESTIMATED EMISSIONS (pounds/year)	204	1482	3484	282	0.4	22
TOTAL ESTIMATED EMISSIONS (tons/year)	0.10	0.74	1.74	0.14	0.00	0.01

Notes:
MMSCF = Million Standard Cubic Feet
BTU = British Thermal Unit

1 cubic foot natural gas = 1,028 BTU
Source: http://www.eia.doe.gov/kids/energyfacts/science/energy_calculator.html#natgascalc

Office Space (as opposed to warehouse space): 15-45 BTU per hour per square foot
There are approximately 5,000 heating hours in an average year
Source: Dale R. Scott, P.E., SAIN Engineering Associates, Inc., 75CES/CEEE, Hill AFB, UT

Assume 30 BTU per hour per square foot for new construction
Emission factors: EPA values for residential furnaces
For natural gas, SOx assumed equal to SO2

Table 8: Calculated Air Emissions Due to Space Heating

If required, prior to operating the proposed action, Hill AFB air quality managers would submit notices of intent, seven day notifications, and modification requests to DAQ. Hill AFB would not be allowed to operate the facilities until DAQ concurs that federal and state requirements are being met.

Conformity Applicability Determination

Due to local non-attainment status, a conformity applicability determination (compliant with 40 CFR 93.153 and UAC R-307-115) was completed for the proposed action. The proposed action would be required to demonstrate conformity with the CAA unless an applicability determination

shows that it is exempt from conformity, in this case, due to having annual emissions below the thresholds established in 40 CFR 93.153(b)(1) and (b)(2). Predicted air emissions due to construction and due to operations were all much less than the established threshold values.

Indirect Effects

During scoping and the detailed analysis, no indirect effects related to air quality were identified for the proposed action.

Cumulative Effects

Construction: Construction-related air emissions would be limited to a duration of several months for each of the four buildings, and would not be concurrent. Comparing the magnitude of predicted construction-related air emissions to existing emissions for Hill AFB, Davis and Weber Counties (Table 2), there would not be significant cumulative effects to air quality associated with constructing the proposed action.

Operations: Hill AFB air quality managers would ensure that long-term operation of the proposed action complies with the Hill AFB Title V Permit, any relevant approval orders, EPA regulations, and the Utah SIP. Any required air quality control devices would be installed and tested prior to allowing newly installed equipment to begin operating. Comparing the magnitude of predicted operational air emissions to existing emissions for Hill AFB, Davis and Weber Counties (Table 2), no significant cumulative effects to air quality were identified for operating the proposed action.

West Side Development: The *Final Environmental Assessment: West Side Development, Enhanced Use Lease, Hill Air Force Base* (CH2M 2008) identified insignificant air emissions. When taken in aggregate, no significant cumulative effects to air quality were identified.

4.2.1.2 Alternative B: No Action

Existing air emissions as explained in Section 3.3.1 would continue. The no action alternative would have no other direct effects, no indirect effects, and no cumulative effects.

4.2.2 Predicted Effects to Solid and Hazardous Waste

4.2.2.1 Alternative A (Proposed Action): Construct New Software Facilities

Direct Effects Due to Construction

Waste Generation: During the proposed construction activities, solid wastes expected to be generated would be construction debris consisting mainly of concrete, metal, and building materials. These items would be treated as uncontaminated trash and recycled when feasible. Any paint on pavements being removed would be tested for lead-based paint content. (see waste management below). It is possible that equipment failure or a spill of fuel, lubricants, or construction-related chemicals could generate solid or hazardous wastes. In the event of a spill of regulated materials, Hill AFB environmental managers and their contractors would comply with all federal, state, and local spill reporting and cleanup requirements.

Demolition Debris: Any asbestos detected during the detailed asbestos survey and subsequently removed during an abatement action would be disposed in accordance with permit requirements at a disposal facility that is approved to accept both friable and non-friable asbestos. Loose flakes of lead-based paint (confirmed to contain lead by on-site inspections using a portable X-ray fluorescence analyzer) would be scraped, collected, and properly disposed at a permitted hazardous waste disposal facility. Dielectric fluid from any transformers or light ballasts suspected of containing PCBs would be tested, and the equipment would be properly disposed as either a regulated waste (PCB content of 50 parts per million [ppm] or more) or as uncontaminated trash (PCB content less than 50 ppm).

The uncontaminated demolition debris and lead-based paint that is still affixed to surfaces would all be disposed off base at a local construction debris (Class VI) landfill. Class VI landfills are allowed to accept construction and demolition waste, including: lead-based paint that is still affixed to surfaces and a quantity of 10 PCB-containing light ballasts per structure.

Thermostats that contain mercury switches would be collected by technicians from the Hill AFB facility systems flight (75 CES/CEOFSH) prior to demolition activities. Any thermostats not saved for local reuse would be delivered to DRMO, which has an office on Hill AFB. DRMO would send the thermostats to be recycled, and a waste stream would not be created.

Any asphalt pavements surrounding the structures would be removed, collected, and would either be recycled, or stored and made available for reuse during future Hill AFB construction projects.

Waste Management: Hill AFB personnel have specified procedures for handling construction-related solid and hazardous wastes in their engineering construction specifications. The procedures are stated in Section 01000, General Requirements, Part 1, General, Section 1.24, Environmental Protection. All solid non-hazardous waste is collected and disposed or recycled on a routine basis. Hazardous wastes are stored at sites operated in accordance with the requirements of 40 CFR 265. The regulations require the generator to characterize hazardous wastes with analyses or process knowledge. Suspect waste is labeled as hazardous waste and is safely stored while analytical results are pending or until sufficient generator knowledge is obtained. Hazardous wastes are eventually labeled, transported, treated, and disposed in accordance with federal and state regulations.

Excavated Soils: There is no known soil contamination at the location of the proposed action. However, excavations could potentially encounter contaminated soil, as explained in Section 3.3.2. If unusual odors or soil discoloration were to be observed during any excavation or trenching necessary to complete the proposed action, the soil would be stored on plastic sheeting and the Hill AFB Environmental Restoration Branch (75 CEG/CEVR) would be notified. Any excess clean soil would either be used as fill for another on-site project or placed in the Hill AFB landfill. Any soil determined to be hazardous would be eventually labeled, transported, treated, and disposed in accordance with federal and state regulations. No soil would be taken off base without prior 75 CEG/CEVR written approval.

Direct Effects Due to Operations

The activities to be conducted in the new software facilities would be the same as are now being conducted in the existing facilities. Based on the area of new workspace (254,000 ft^2) compared to existing workspace in Building 1515 (288,000 ft^2), the waste streams discussed in Section 3.3.2 (all are low volume waste streams) would be expected to increase by 90 percent.

Indirect Effects

During scoping and the detailed analysis, no indirect effects related to solid and hazardous waste were identified for the proposed action.

Cumulative Effects

Proper handling of solid and hazardous waste eliminates releases of contaminants to the environment or reduces such releases in conformity with legal limits. There would be no significant cumulative solid or hazardous waste effects associated with the proposed action. The *Final Environmental Assessment: West Side Development, Enhanced Use Lease, Hill Air Force Base* (CH2M 2008) identified small beneficial effects to solid and hazardous waste. When taken in aggregate, no significant cumulative effects to solid and hazardous waste were identified.

4.2.2.2 Alternative B: No Action

Under the no action alternative, the wastes discussed in Section 3.3.2 would continue to be generated. With respect to solid and hazardous waste, the no action alternative would have no other direct effects, no indirect effects, and no cumulative effects.

4.2.3 Predicted Effects to Biological Resources

4.2.3.1 Alternative A (Proposed Action): Construct New Software Facilities

Direct Effects Due to Construction

- ***Construction***: Grading and covering the site with structures and pavements would reduce available forage for birds and displace rodents. Eliminating these grasses and forbs would not be a significant effect due to the small size of the proposed project and the low quality of existing forage (WCI of 0.20). Recent site observations confirmed the presence of invasive species listed in Table 5. Without following best management practices, construction activities would increase the chance of introducing additional invasive species.

- ***Best Management Practices***: If construction should occur during nesting season (usually April through August), a bird survey would be conducted, and an appropriate certificate of registration would be obtained to permit the taking of any protected species nesting on the ground of the proposed project area. Best management for loss of habitat would be accomplished by providing a functional lift to the habitat. This would be accomplished by restoration planting (of any areas not occupied by structures or pavements) that would

include fire resistant plants, native grasses, and native shrubs as outlined in the Hill AFB *Integrated Natural Resources Management Plan* (Hill 2007b).

Direct Effects Due to Operations

Operating the proposed action would discourage nesting and foraging activities on the ground of birds. In addition, operations would discourage small mammals from establishing residency at the site. If the proposed buildings have overhangs with ledges or other similar structural characteristics, nesting and roosting of pigeons, starlings, ravens, and other nuisance birds could increase during migration or residency periods.

Indirect Effects

Indirect effects of displaced mammals would result in increase of mammals occupying less semi-improved habitat on Hill AFB. Loss of foraging area would result in birds moving to other semi-improved habitat areas for food. Any increased nesting and roosting of pigeons, starlings, ravens, and other nuisance birds could contribute to bird aircraft strike hazard (BASH) during migration or residency periods. This issue is addressed in Section 4.2.4.2.

During scoping and the detailed analysis, no other indirect effects related to biological resources were identified for the proposed action.

Cumulative Effects

Past actions at this site include removal of native sagebrush by consistent mechanical mowing of the vegetation. The habitat has been changed from a native shrub dominated community to a degraded grass and forb plant community. Constructing the proposed action would reduce available forage for birds and displace rodents. Long-term existence of the proposed facilities would prevent succession of this area to a native state. However, due to the small size of the proposed project and already degraded biological indices, no significant cumulative effects to biological resources were identified for the proposed action. The *Final Environmental Assessment: West Side Development, Enhanced Use Lease, Hill Air Force Base* (CH2M 2008) identified insignificant effects to biological resources. When taken in aggregate, no significant cumulative effects to biological resources were identified.

4.2.3.2 Alternative B: No Action

With respect to biological resources, the 22 acre site would remain in its current, somewhat degraded, condition. Existing human activities, such as periodic mowing, would continue in the area. The no action alternative would have no other direct effects, indirect effects, or cumulative effects.

4.2.4 Predicted Effects to Water Quality

4.2.4.1 Alternative A (Proposed Action): Construct New Software Facilities

Direct Effects Due to Construction

Based on information provided by Hill AFB engineers, the land area to be disturbed by the proposed facilities would be approximately 22 acres in size. The proposed action would be covered under Utah's general construction permit rule for stormwater compliance. Prior to initiating any construction activities, this permit must be obtained and erosion and sediment controls must be installed according to a stormwater pollution prevention plan (SWPPP). The SWPPP would specify measures to prevent soil from leaving the construction site on the wheels of construction vehicles, thereby controlling the addition of sediments to the storm drain system. The proponents would coordinate with the Hill AFB water quality manager (75CEV/CEGOC) for SWPPP approval prior to submitting an application for a Utah construction stormwater permit.

Design engineers would ensure that components of the existing stormwater collection system would not be damaged, by avoiding or relocating the relevant structures. Hill AFB construction specifications would require the contractor to restore the land to a non-erosive condition. All areas disturbed by excavation would be backfilled, and then either be covered by pavements, gravel, or re-planted, re-seeded, or sodded to prevent soil erosion.

Since the proposed action would convert open land to impermeable surfaces, some increased stormwater runoff volume would be expected unless runoff controls were to be created during construction of the facility. EISA Section 438 specifies storm water runoff requirements for federal development projects. The sponsor of any development or redevelopment project involving a federal facility with a footprint that exceeds 5,000 ft^2 must ensure that all precipitation from the 95th percentile, 24-hour storm event is retained on site (for Hill AFB, this storm depth is 0.8 inches [Zautner 2010]).

The capacity of existing storm drains downstream from Building 1515 is exceeded during hard rains. A stormwater study would be conducted. Design engineers would then ensure that new detention and/or retention structures are sufficient to either improve the current situation, or at a minimum, maintain current conditions.

Depth to groundwater is approximately 30 feet bgs in the vicinity of proposed action. Since the proposed action would not require excavations deeper than approximately ten feet bgs (for footings, foundations, and on-site utilities), no direct groundwater effects were identified for the proposed action.

So that BASH is not increased, facility runoff would be handled in such a manner that increased bird activity would not be encouraged. During facility design, engineers would incorporate measures to distribute runoff such that the site would not increase in its potential to attract birds. Based on expected soil infiltration rates, likely control measures could include use of multiple swails and/or subsurface drainage structures. To further discourage bird activity in any areas to

be revegetated, a seed mixture would be provided by the Hill AFB natural resources program manager.

Direct Effects Due to Operations

The proposed facilities would be subject to Utah's multi-sector general permit for industrial facilities. The *Hill AFB Stormwater Management Plan - Municipal Stormwater Permit* establishes good housekeeping measures and other best management practices to prevent contamination of runoff.

Indirect Effects

As discussed in Section 3.3.4, the proposed action would be located within a DWSP area. Potential contamination sources such as oil and grease from vehicles, and agricultural chemicals from landscaped areas would be controlled. Facility design and operating standards would be based on good housekeeping measures such as street sweeping and controlling litter, and other best management practices such as cleaning, inspecting, and maintaining the stormwater collection system.

Cumulative Effects

Water quality would be protected during and after construction activities. There would be no significant cumulative water quality effects associated with the proposed action. The *Final Environmental Assessment: West Side Development, Enhanced Use Lease, Hill Air Force Base* (CH2M 2008) identified insignificant water quality effects. When taken in aggregate, no significant cumulative effects to water quality were identified.

4.2.4.2 Alternative B: No Action

As discussed in Section 3.3.4, the capacity of existing storm drains downstream from Building 1515 is exceeded during hard rains. With respect to water quality, the no action alternative would have no other direct effects, indirect effects, or cumulative effects.

4.3 Summary Comparison of Predicted Environmental Effects

This section only applies to the alternatives considered in detail.

Issue	Alternative A Proposed Action	Alternative B No Action
Air Quality	Qualified asbestos abatement contractors would prevent impacts to air quality. Construction equipment would create temporary emissions. Fugitive dust would be controlled. Air emissions from operations would be nearly identical to existing conditions for Building 1515. Conformity with the Clean Air Act was demonstrated.	Existing air emissions (nearly all from space heating) are 1.7 tons per year or less for each criteria pollutant as well as for HAPs.
Solid and Hazardous Waste	If contaminated building materials, soils or pavements are identified, they would be properly handled during the demolition and construction process. Operational activities would generate the same types of waste as the existing facility.	Non-regulated wastes are collected and disposed. Various regulated wastes are collected, stored, analyzed if necessary, and either recycled or disposed in accordance with federal and state regulations.
Biological Resources	The proposed action would reduce available forage for birds and displace rodents. If any protected nesting birds should exist adjacent to construction activities, a certificate of registration would have to be obtained. Any restoration planting would include a specified seed mix.	Site habitat has been previously degraded by human activities. There are a limited number of wildlife species including sparse populations of small mammals and few birds. Many of the grasses and forbs are invasive.
Water Quality	During construction and operations, water quality would be protected by implementing stormwater management practices. Precipitation from the 95th percentile, 24 hour storm event would be retained on site. Detention and/or retention structures would either improve the current situation, or at a minimum, maintain current conditions. Good housekeeping measures and other best management practices would be incorporated into facility design and operations.	Good housekeeping measures and other best management practices are being followed. The capacity of existing storm drains downstream from Building 1515 is exceeded during hard rains. Storm drains convey surface runoff off base without detention.

Table 9: Summary Comparison of Predicted Environmental Effects

5.0 LIST OF PREPARERS

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Civil Engineer Group, Environmental Division, 75 CEG/CEV
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7274 Wardleigh Road, Hill AFB UT 84056
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Select Engineering Services
7274 Wardleigh Road, Hill AFB UT 84056
Michelle Sayers, Historic Building Status, (801) 586-2464

6.0 LIST OF PERSONS AND AGENCIES CONSULTED

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Jaynie Hirschi, Archaeologist, (801) 775-6920
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Software Maintenance Group, 309 SMXG/OBA
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Kent Poorman, Software Group Facility Lead, (801) 777-9402

Aircraft Maintenance Group, 309 AMXG/EN
5875 Southgate Avenue, Hill AFB UT 84056
Dave Gange, Lead Facility Engineer, (801) 777-6363

7.0 REFERENCES

CFR: *Code of Federal Regulations*, US Government Printing Office, Office of the Federal Register (various sections and dates).

CH2M 2008: *Final Environmental Assessment: West Side Development, Enhanced Use Lease, Hill Air Force Base*, CH2M HILL, June, 2008.

CH2M 2010: Spreadsheet provided by Hill AFB contractor CH2M HILL, November, 2010.

DAQ 2007: *Utah's Area Designation Recommendation for the 2006 PM2.5 NAAQS*, Utah Division of Air Quality, December, 2007.

DAQ 2010a: *State of Utah National Ambient Air Quality Standards, Areas of Non-Attainment and Maintenance (Updated March 2010)*, Utah Division of Air Quality Website, March, 2010.

DAQ 2010b: *Division of Air Quality Annual Report for 2009*, Utah Division of Air Quality, January, 2010.

EM 2010: Spreadsheet provided by Hill AFB contractor EM-Assist, November, 2010.

EPA 1991: *Nonroad Engine and Vehicle Emission Study - Report*, Table 2-07a, US Environmental Protection Agency, 1991.

EPA 2010: *County Emissions Report - Hazardous Air Pollutants*, EPA, June, 2010.

Hill AFB: *Construction Specifications, Section 01000, General Requirements, Part 1, General, Section 1.24, Environmental Protection*, Hill AFB, current version.

Hill 2007a: *Integrated Cultural Resources Management Plan*, Hill AFB, 2007.

Hill 2007b: *Integrated Natural Resources Management Plan*, Hill AFB, 2007.

Hill 2010: *2009 Annual Criteria and Toxic Pollutant Emission Inventory*, Hill AFB, prepared by CH2M HILL, April, 2010.

Stantec 2007: *Hill AFB Stormwater Management Plan - Municipal Stormwater Permit*, Stantec Consulting, April, 2007.

Stantec 2008b: *Drinking Water Source Protection Plan, Hill Air Force Base Well 8*, Stantec Consulting, updated May, 2008.

UGS 1994a: *Earthquake Ground Shaking in Utah*, Utah Geological Survey, 1994.

UGS 1994b: *Liquefaction Potential for a Part of Weber County, Utah*, Utah Geological Survey, 1994.

UGS 2009: *Earthquake Fault Map of a Portion of Weber County, Utah*, Utah Geological Survey, current on website as of March, 2009.

USAF 2010a: *Form 1391, Software Hardware Avionics Integration Facility*, USAF, July, 2010.

USAF 2010b: *Form 1391, Non-Secure Software Engineering Development Facility*, USAF, October, 2010.

WFRC 2003: *Natural Hazard Pre-Disaster Mitigation Plan, Utah's Wasatch Front*, Wasatch Front Regional Council, December, 2003.

Woolpert 2010: *Web-Based General Plan Update Hill Air Force Base, Utah*, Woolpert, Inc., January, 2010.

Zautner 2004: *Hill AFB 95th Percentile 24-hour Precipitation Amount*, Jeffrey H. Zautner, Meteorologist, Air Force Combat Climatology Center, June 10, 2010.

APPENDIX A

CULTURAL RESOURCES FINDING OF NO ADVERSE EFFECT

State of Utah

GARY R. HERBERT
Governor

GREG BELL
Lieutenant Governor

Department of Community and Culture

MICHAEL HANSEN
Acting Executive Director

State History

PHILIP F. NOTARIANNI
Division Director

February 8, 2011

Mr. Robert T. Elliott
Chief, Environmental Management Division
75th CEG/CEV
7274 Wardleigh Road
Hill Air Force Base Utah 84056-5137

RE: Demolition of Building 1723 and an Addition on Building 1515

In reply please refer to Case No. 11-0229

Dear Mr. Elliott:

The Utah State Historic Preservation Office received your request for our comment on the above-referenced project on February 1, 2011. Based on the information provided to our office, we concur with the finding that this undertaking will have no adverse effect to historic properties.

This information is provided to assist with Section 106 responsibilities as per §36CFR800. If you have any questions, please contact me at clhansen@utah.gov or (801) 533-3561.

Regards,

Chris Hansen
Preservation Planner

UTAH STATE HISTORY
UTAH STATE HISTORICAL SOCIETY
ANTIQUITIES
HISTORIC PRESERVATION
RESEARCH CENTER & COLLECTIONS

300 S. RIO GRANDE STREET, SALT LAKE CITY, UT 84101-1182 · TELEPHONE 801 533-3500 · FACSIMILE 801 533-3503 · HISTORY.UTAH.GOV

DEPARTMENT OF THE AIR FORCE
75TH CIVIL ENGINEER GROUP (AFMC)
HILL AIR FORCE BASE UTAH

26 January 2011

Mr. Robert T. Elliott
Chief, Environmental Management Division
75th CEG/CEV
7274 Wardleigh Road
Hill Air Force Base, Utah 84056-5137

Mr. Chris Hansen
State Historic Preservation Office
300 Rio Grande
Salt Lake City, Utah 84101

Dear Mr. Hansen

Hill Air Force Base (AFB) is currently proposing to construct facilities to accommodate an increased need for software engineering, development, maintenance, and integration associated with the F-22 and F-35 aircraft. The existing facilities on Hill AFB will not accommodate projected workloads. The Area of Potential Effect (APE) is approximately 22 acres (Attachment 1).

The proposed action would include demolition of building 1723 and an addition on building 1515. Neither of these buildings are historic and therefore not eligible for the National Register of Historic Places (NRHP).

Within Hill AFB, three previous inventories have comprised cultural resources survey of 840 acres (U-91-WC-687m, U-95-WC-280p, and U-01-HL-0164m). Results from these projects include the recordation of one historic refuse dump (42Dv51) and two prehistoric isolates, all determined ineligible for listing in the NRHP. Inventory efforts have resulted in the survey of 12.5 percent of the total area of Hill AFB. None of the previous inventories fall within the APE of the current proposed project.

Building construction and associated infrastructure will encompass the entire APE of the current project. Given the lack of previous findings and the extensive development and disturbance of Hill AFB, the potential for archaeological historic properties is extremely low. However, if any archaeological resources are found during construction, ground-disturbing activities in the immediate vicinity will cease, the Hill AFB Cultural Resources Program will be notified, and the unanticipated discovery of archaeological deposits procedures shall be implemented with direction from the Hill AFB Cultural Resources Program and in accordance with the Hill AFB Integrated Cultural Resources Management Plan (Attachment 2).

Hill AFB has determined the proposed project will have no adverse effect to historic properties [36 CFR §800.4(d)(1)]. I request your concurrence in these determinations as specified in 36 CFR §800.

An Environmental Assessment has been prepared for the proposed software facilities construction. If you would like a copy of this document to review, or should you or your staff have any questions about the project, please contact our archaeologist, Ms. Jaynie Hirschi, 75th CEG/CEVP, at (801) 775-6920 or at jaynie.hirschi@hill.af.mil.

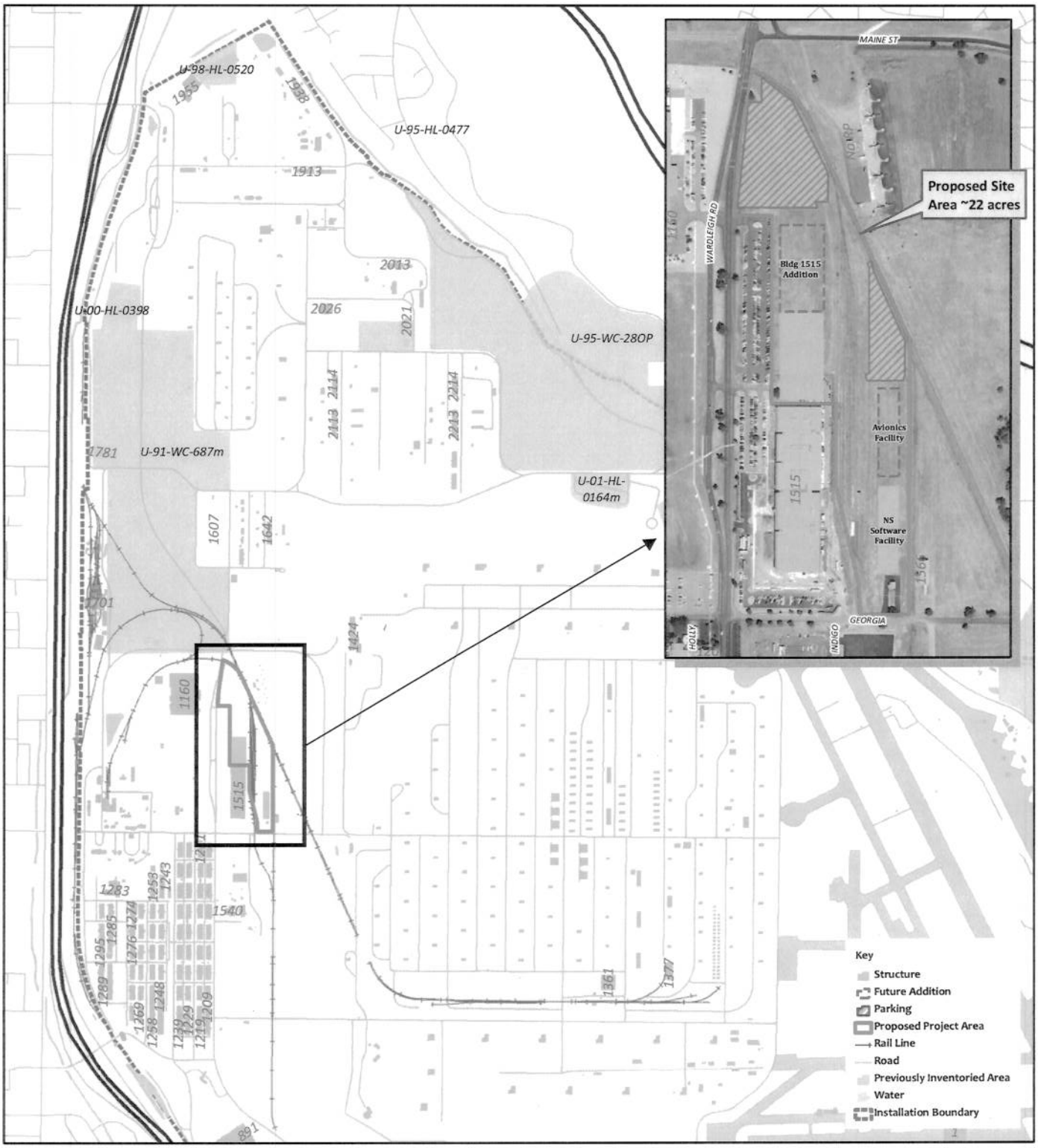
Sincerely

Robert Elliott

ROBERT T. ELLIOTT, P.E., GS-14, DAF
Chief, Environmental Management Division
75th Civil Engineer Group

Attachments:
1. Area of Potential Effect for the Proposed Software Avionics Area, Hill Air Force Base, Utah.
2. Unanticipated Discovery of Archaeological Deposits.

I:\AV_Projects\CRM\EAs_2010\SoftwareAvionics.mxd



Area of Potential Effects for the
Proposed Software Avionics Area
Hill Air Force Base, Utah

1: 24,000

0 250 500 1,000 Meters

0 1,000 2,000 4,000 Feet

N

Standard Operating Procedure

UNANTICIPATED DISCOVERY OF ARCHAEOLOGICAL DEPOSITS

APPLICABLE LAWS AND REGULATIONS

- National Historic Preservation Act
- National Environmental Policy Act
- Native American Graves Protection and Repatriation Act
- AFI 32–7065 (June 2004), *Cultural Resources Management Program*

OVERVIEW

All undertakings that disturb the ground surface have the potential to discover buried and previously unknown archaeological deposits. The accidental discoveries of archaeological deposits during an undertaking can include but are not limited to:

- Undiscovered/undocumented structural and engineering features; and
- Undiscovered/undocumented archaeological resources such as foundation remains, burials, artifacts, or other evidence of human occupation.

POLICY

When cultural resources are discovered during the construction of any undertaking or ground-disturbing activities, Hill AFB shall:

- Evaluate such deposits for NRHP eligibility.
- Treat the site as potentially eligible and avoid the site insofar as possible until an NRHP eligibility determination is made.
- Make reasonable efforts to minimize harm to the property until the Section 106 process is completed.
- **The BHPO will ensure that the provisions of NAGPRA are implemented first if any unanticipated discovery includes human remains, funerary objects, or American Indian sacred objects (see SOP #6).**

PROCEDURE

Step 1: Work shall cease in the area of the discovery (Figure 5-5). Work may continue in other areas.

- The property is to be treated as eligible and avoided until an eligibility determination is made. Hill AFB will continue to make reasonable efforts to avoid or minimize harm to

Further construction activities in the vicinity of the site will be suspended until an agreed-upon testing strategy has been carried out and sufficient data have been gathered to allow a determination of eligibility. The size of the area in which work should be stopped shall be determined in consultation with the **BHPO**.

the property until the Section 106 process is completed.

Step 2: Immediately following the discovery, the **Project Manager** shall notify the installation **BHPO**.

Step 3: The **BHPO** or a professional archaeologist shall make a field evaluation of the context of the deposit and its probable age and significance, record the findings in writing, and document with appropriate photographs and drawings.

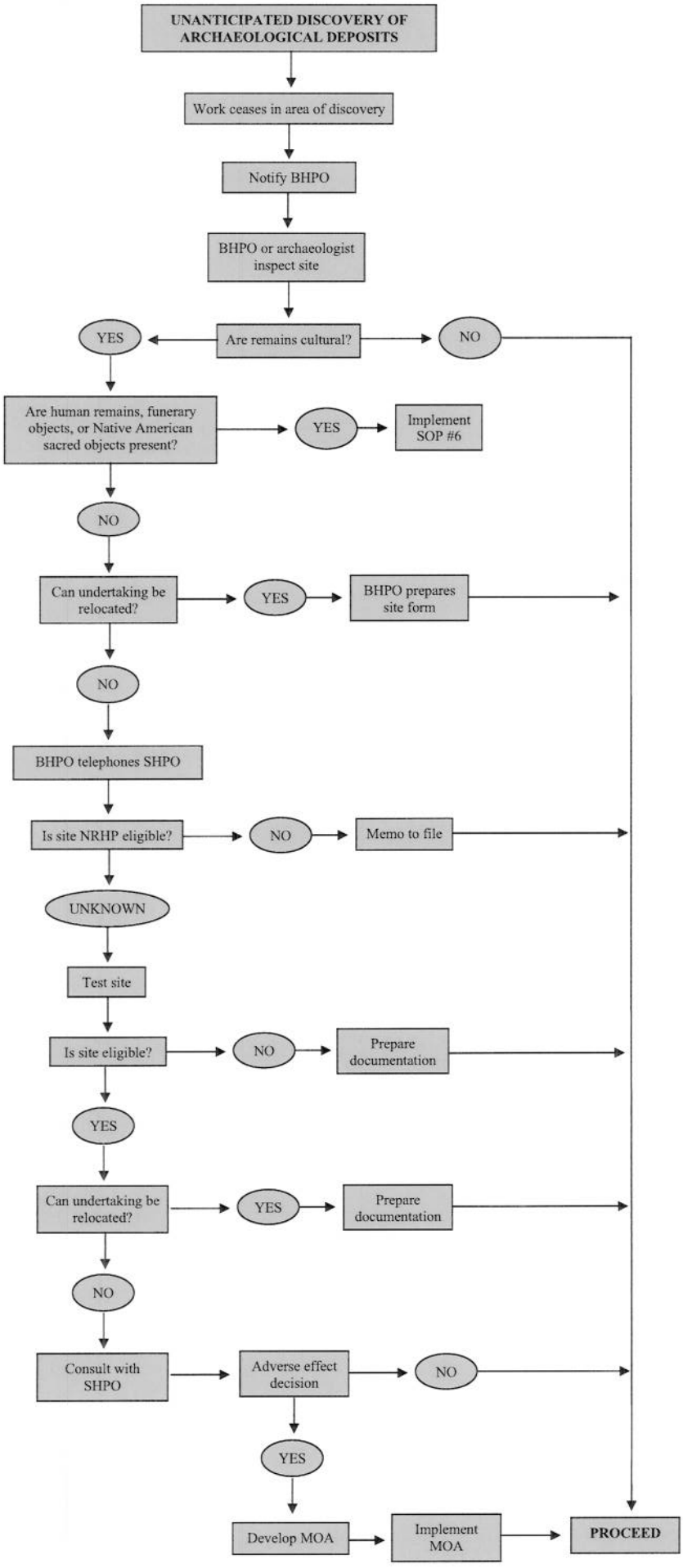
- If disturbance of the deposits is minimal and the excavation can be relocated to avoid the site, the **BHPO** will file appropriate site forms in a routine manner.
- If the excavation cannot be relocated, the **BHPO** shall notify the office of the **SHPO** to report the discovery and to initiate an expedited consultation.

The Section 106 review process is initiated at this point.

- If the deposits are determined to be ineligible for inclusion in the NRHP, then Hill AFB **BHPO** will prepare a memorandum for record and the construction may proceed.
- If the existing information is inadequate for an NRHP eligibility determination, Hill AFB **BHPO** shall develop an emergency testing plan in coordination with the SHPO.

Step 4: Hill AFB shall have qualified personnel conduct test excavations of the deposits to determine NRHP eligibility.

- Hill AFB BHPO, in consultation with the SHPO, will determine appropriate methodology for NRHP eligibility determination.
- If the SHPO and Hill AFB agree that the deposits are ineligible for inclusion in the NRHP, then work on the undertaking may proceed.
- If the deposits appear to be eligible, or Hill AFB and the SHPO cannot agree on the question of eligibility, then Hill AFB shall implement alternative actions, depending on the urgency of the proposed action.
  - Hill AFB may relocate the project to avoid the adverse effect.
  - Hill AFB may request the Keeper of the National Register to provide a determination.
  - Hill AFB may proceed with a data recovery plan under a MOA developed in coordination with the SHPO and possibly the ACHP and interested parties.
  - **Hill AFB may request comments from the ACHP and may develop and implement actions that take into account the effects of the undertaking on the property to the extent feasible and the comments of the SHPO, ACHP, and interested parties. Interim comments must be provided to Hill AFB within 48 hours; final comments must be provided within 30 days.**


UNANTICIPATED DISCOVERY OF ARCHAEOLOGICAL DEPOSITS
Work ceases in area of discovery
Notify BHPO
BHPO or archaeologist inspect site
Are remains cultural?
YES
NO
Are human remains, funerary objects, or Native American sacred objects present?
YES
Implement SOP #6
NO
Can undertaking be relocated?
YES
BHPO prepares site form
NO
BHPO telephones SHPO
Is site NRHP eligible?
NO
Memo to file
UNKNOWN
Test site
Is site eligible?
NO
Prepare documentation
YES
Can undertaking be relocated?
YES
Prepare documentation
NO
Consult with SHPO
Adverse effect decision
NO
YES
Develop MOA
Implement MOA
PROCEED

FINDING OF NO SIGNIFICANT IMPACT

1. **NAME OF ACTION:** Proposed Software Facilities, Hill Air Force Base, Utah

2. **DESCRIPTION OF THE PROPOSED ACTION:** Hill Air Force Base (AFB) proposes to construct new software facilities to accommodate future mission requirements. The proposed action would provide adequate facilities for software development, maintenance, and integration for F-22 and F-35 aircraft. One unused building on the base would be demolished.

3. **SELECTION CRITERIA:**

The proposed action meets the following criteria:

- be located in the software engineering development area in accordance with the Hill AFB general plan;
- provide an additional 254,000 square feet (ft^2) of military compliant structures, plus driveways and parking; and
- be adjacent to existing utilities.

4. **ALTERNATIVES CONSIDERED:**

Alternative A: Proposed Action

Construct new software facilities. The new facilities would meet all of the selection criteria.

Alternative B: No Action

New software facilities would not be constructed.

Alternative C: Use Other Existing Facilities

There are no other facilities on base with adequate security, adequate air conditioning, or that could be converted to provide the required secure software development environment.

Alternative D: Other Locations on Base

Constructing the facility elsewhere on base did not meet the criterion for being located in the software engineering development area. This alternative was not considered in further detail in the document.

5. SUMMARY OF ANTICIPATED ENVIRONMENTAL EFFECTS:

Issue	Alternative A Proposed Action	Alternative B No Action
Air Quality	Qualified asbestos abatement contractors would prevent impacts to air quality. Construction equipment would create temporary emissions. Fugitive dust would be controlled. Air emissions from operations would be nearly identical to existing conditions for Building 1515. Conformity with the Clean Air Act was demonstrated.	Existing air emissions (nearly all from space heating) are 1.7 tons per year or less for each criteria pollutant as well as for hazardous air pollutants (HAPs).
Solid and Hazardous Waste	If contaminated building materials, soils or pavements are identified, they would be properly handled during the demolition and construction process. Operational activities would generate the same types of waste as the existing facility.	Non-regulated wastes are collected and disposed. Various regulated wastes are collected, stored, analyzed if necessary, and either recycled or disposed in accordance with federal and state regulations.
Biological Resources	The proposed action would reduce available forage for birds and displace rodents. If any protected nesting birds should exist adjacent to construction activities, a certificate of registration would have to be obtained. Any restoration planting would include a specified seed mix.	Site habitat has been previously degraded by human activities. There are a limited number of wildlife species including sparse populations of small mammals and few birds. Many of the grasses and forbs are invasive.
Water Quality	During construction and operations, water quality would be protected by implementing stormwater management practices. Precipitation from the 95th percentile, 24 hour storm event would be retained on site. Detention and/or retention structures would either improve the current situation, or at a minimum, maintain current conditions. Good housekeeping measures and other best management practices would be incorporated into facility design and operations.	Good housekeeping measures and other best management practices are being followed. The capacity of existing storm drains downstream from Building 1515 is exceeded during hard rains. Storm drains convey surface runoff off base without detention.

6. FINDING OF NO SIGNIFICANT IMPACT: Based on the above considerations, a Finding Of No Significant Impact (FONSI) is appropriate for this assessment.

Approved by: _____ Date: 15 Aug 11

HARRY BRIESMASTER III, GS-15, DAF
Director, 75th Civil Engineer Group